

IN THE CLAIMS:

Amendments to the Claims

Please amend claim 1 and add the new claims as shown below.

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A liquid crystal display device comprising:
a pair of substrates, at least one of said substrates being transparent;
a liquid crystal layer interposed between said pair of substrates; and
pixel electrodes and common electrodes and active elements arranged on at least one substrate ~~between of~~ said pair of substrates, a liquid crystal of said liquid crystal layer being controlled to perform display by applying a voltage between said pixel electrode and said common electrode;

wherein an alignment layer is disposed on a surface in contact with said liquid crystal layer of each of said pair of substrates, and said alignment layer is made of an organic polymer selected from the group consisting of polyamic acid group polymers and polyimide ester group polymers having a relative imidization ratio in a range from above 60% to less than 90%.

2. (new) A liquid crystal display device according to claim 1, wherein said alignment layer is made of an organic polymer selected from the group consisting of polyamic acid group polymers and polyimide ester group polymers having a relative imidization ratio above 70%.

3. (new) A liquid crystal display device according to any one of claims 1 and 2, wherein said active element is a thin film transistor.

4. (new) A liquid crystal display device according to any one of claims 1 and 2, wherein at least one of said pixel electrode and said common electrode is formed of a transparent electric conductive film.

5. (new) A liquid crystal display device according to claim 4, wherein said transparent electric conductive film is an ion doped titanium oxide film or an ion doped zinc oxide (ZnO) film.

6. (new) A liquid crystal display device according to any one of claims 1 and 2, wherein alignment control directions of the liquid crystal in the two interfaces between said liquid crystal layer and said pair of substrates are nearly equal to each other.

7. (new) A liquid crystal display device according to any one of claims 1 and 2, wherein said amic acid group organic polymer contains at least one kind of group selected from the group consisting of methyl ester group, ethyl ester group and propyl ester group.

8. (new) A liquid crystal display device according to any one of claims 1 and 2, wherein a pair of alignment layers is provided and at least one of said pair of alignment layers is a layer made of a photo-reactive material.

9. (new) A liquid crystal display device according to claim 8, wherein said at least one of said pair of alignment layers is formed by irradiating nearly linearly polarized light onto said layer made of the photo-reactive material.

10. (new) A liquid crystal display device according to any one of claims 1 and 2, wherein a pretilt angle of said liquid crystal layer is smaller than 5 degrees.

11. (new) A liquid crystal display device according to claim 1, wherein said alignment layer is made of an organic polymer selected from the group consisting of polyamic acid group polymers and polyimide ester group polymers having a relative imidization ratio of about 80%.

12. (new) A liquid crystal display device comprising:
a pair of substrates, at least one of said substrates being transparent;
a liquid crystal layer interposed between said pair of substrates;
pixel electrodes and common electrodes and active elements arranged on at least one substrate of said pair of substrates, a liquid crystal of said liquid crystal layer being controlled to perform display by applying a voltage between said pixel electrode and said common electrode; and

an alignment layer formed on a surface in contact with said liquid crystal layer of each of said pair of substrates;

wherein said alignment layer on a side of the substrate having said pixel and common electrodes formed thereon has insulation properties, and a thickness T of said alignment layer having said insulation properties in a region nearer to one of said pixel electrode and said common electrode is larger than a value of one fourth of an interval L between said pixel electrode and said common electrode.

13. (new) A liquid crystal display device comprising:
a pair of substrates, at least one of said substrates being transparent;
a liquid crystal layer interposed between said pair of substrates;

pixel electrodes and common electrodes and active elements arranged on at least one substrate of said pair of substrates, a liquid crystal of said liquid crystal layer being controlled to perform display by applying a voltage between said pixel electrode and said common electrode; and

an insulation film having at least two layers is disposed between said pixel electrode and said common electrode;

wherein a thickness T of an alignment layer having insulation properties in a side of the substrate having said pixel and common electrodes formed thereon in a region nearer to one of said pixel electrode and said common electrode is larger a value of one fourth of an interval L between said pixel electrode and said common electrode.

14. (new) A liquid crystal display device according to any one of claims 12 and 13, wherein said alignment layer is made of an organic polymer selected from the group consisting of polyamic acid group polymers and polyimide ester group polymers having a relative imidization ratio in a range from above 60% to less than 90%.

15. (new) A liquid crystal display device according to any one of claims 12 and 13, said alignment layer is made of an organic polymer selected from the group consisting of polyamic acid group polymers and polyimide ester group polymers having a relative imidization ratio in a range from above 70% to less than 90%.

16. A liquid crystal display device according to claim 15, wherein said polyamic acid group organic polymer contains at least one kind of group selected from the group consisting of methyl ester group, ethyl ester group and propyl ester group.

17. (new) A liquid crystal display device according to any one of claims 12 and 13, wherein a surface elastic modulus of said alignment layer is larger than 1 GPa.

18. A liquid crystal display device according to any one of claims 12 and 13, wherein a glass transition temperature T_g of an interface between said alignment layer and said liquid crystal layer is higher than a nematic-isotropic phase transition temperature $T(N-I)$ of a liquid crystal composition forming said liquid crystal layer.

19. A liquid crystal display device according to any one of claims 12 and 13, wherein a glass transition temperature T_g of an interface between said alignment layer and said liquid crystal layer is higher than 220°C.

20. A liquid crystal display device according to any one of claims 12 and 13, wherein said alignment layer is made of an organic polymer of dehydration ring closure of polyamic acid composed of diamine compounds expressed by a chemical formula $N_2N-R-NH_2$ and tetracarboxylic acid anhydride expressed by a chemical formula, and total number of bonding groups making a molecular axis of polymer rotatable such as $-O-$, $-S-$, $-CH_2-$, $-C(CH_3)_2-$, $-C(CF_3)_2-$, $-SO_2-$, bonding group in the meta position, and bonding group in the ortho position contained in the R position and the X position in the repetitive structure of the organic polymer is equal to and less three.

21. A liquid crystal display device according to any one of claims 12 and 13, wherein a pair of alignment layers is provided and at least one of said pair of alignment layers is a photo-reactive material layer.

22. A liquid crystal display device according to claim 21, wherein said at least one of said pair of alignment layers is formed by irradiating nearly linearly polarized light onto said layer made of the photo-reactive material.

23. A liquid crystal display device according to any one of claims 12 and 13, wherein a pretilt angle of said liquid crystal layer is smaller than 5 degrees.